

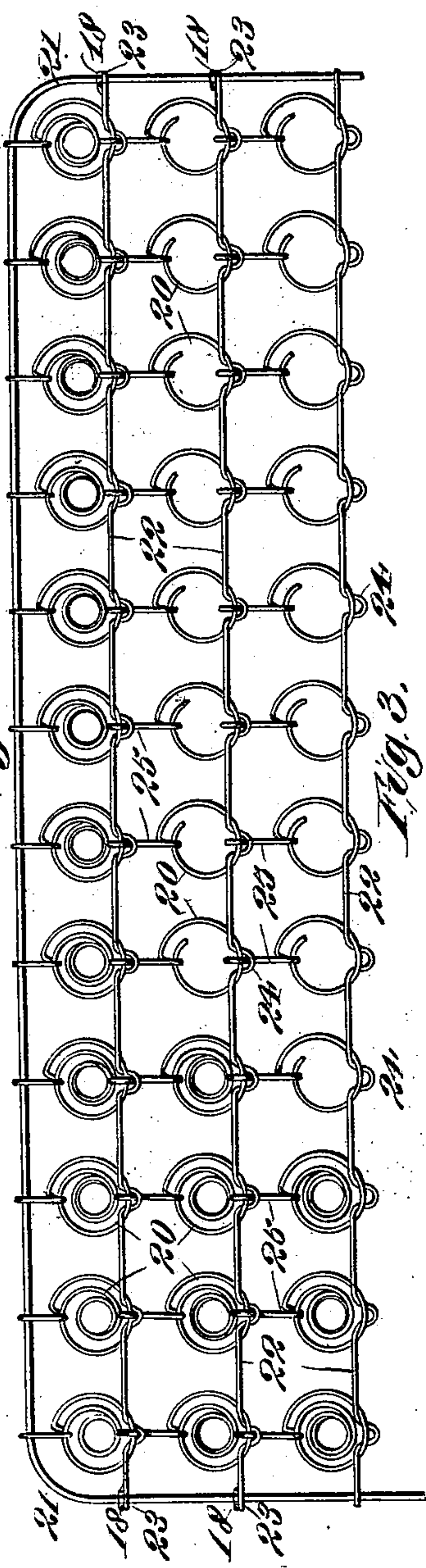
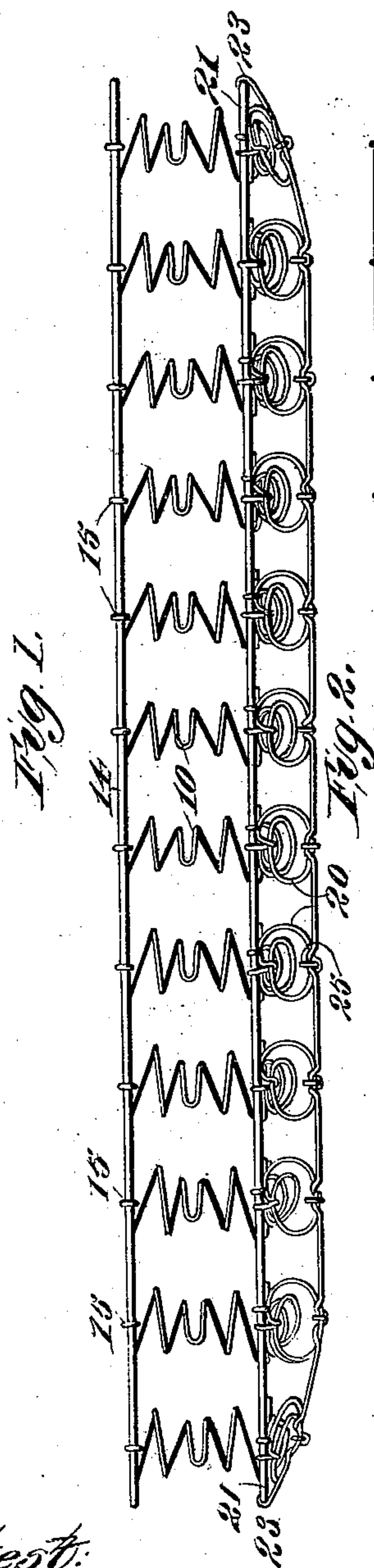
(No Model.)

3 Sheets—Sheet 1.

J. G. SMITH.  
DOUBLE DECKER SPRING BED BOTTOM.

No. 561,139.

Patented June 2, 1896.



Attest:  
Charles Pickles  
J. G. Sweet

Inventor:  
John G. Smith

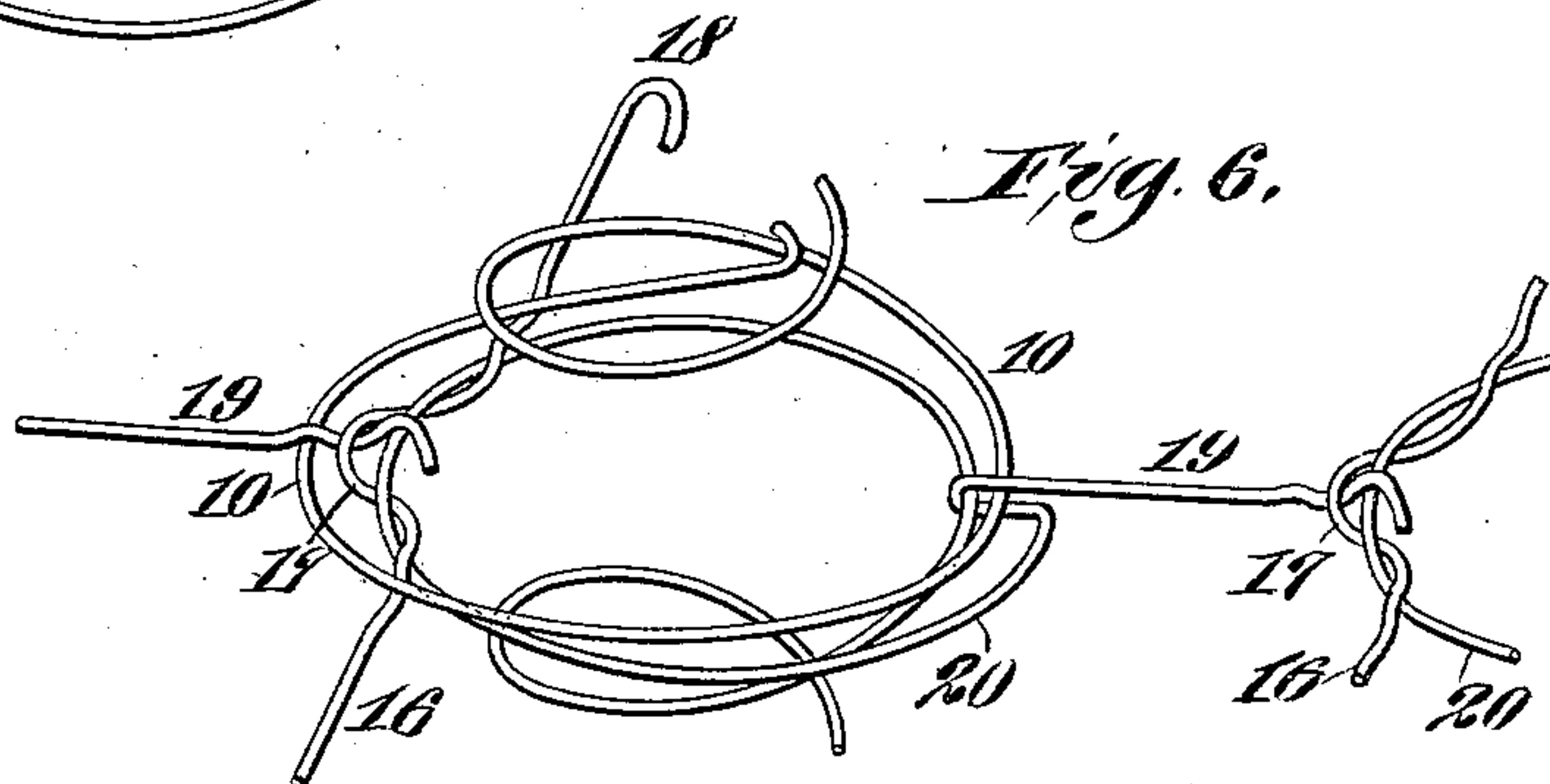
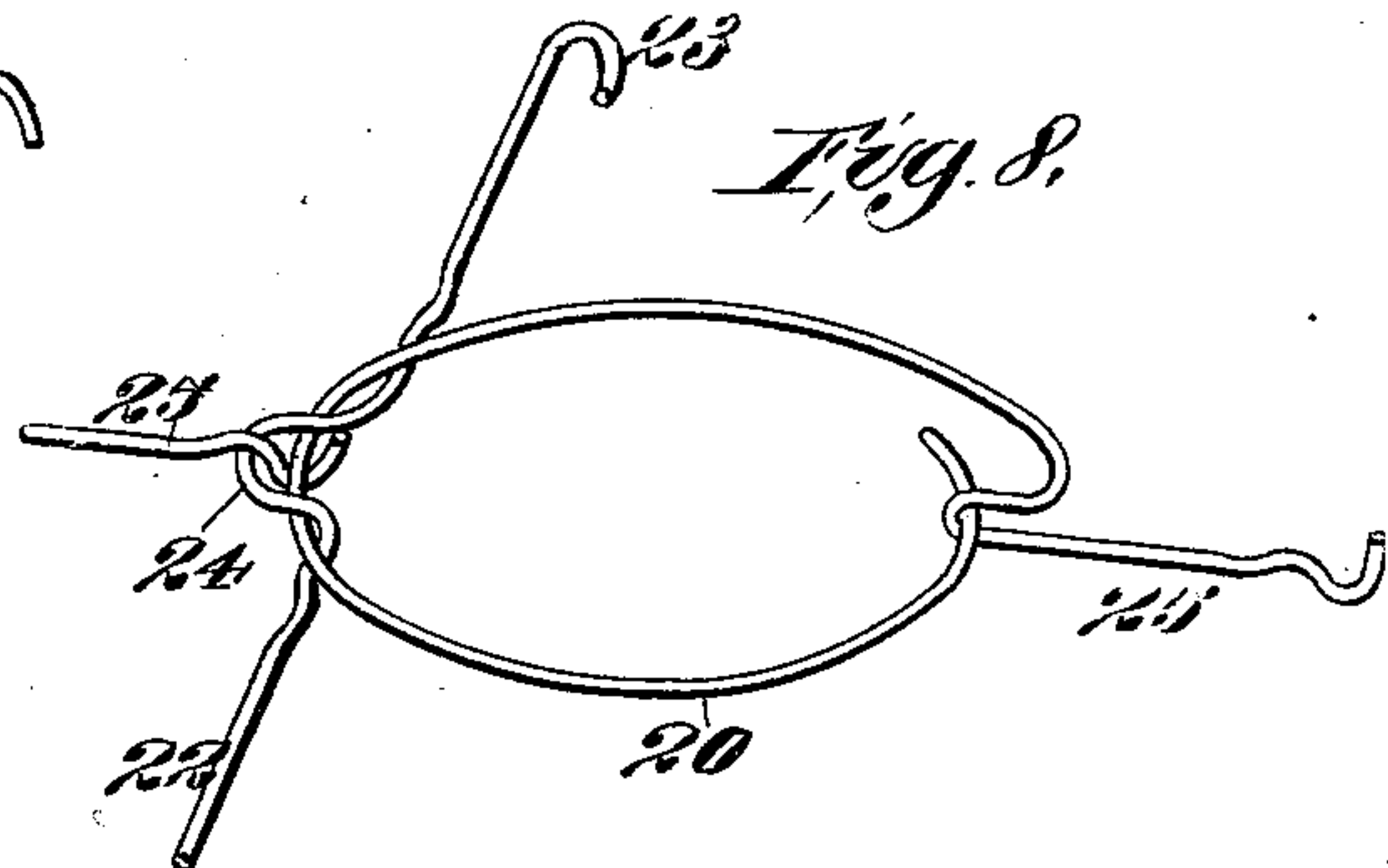
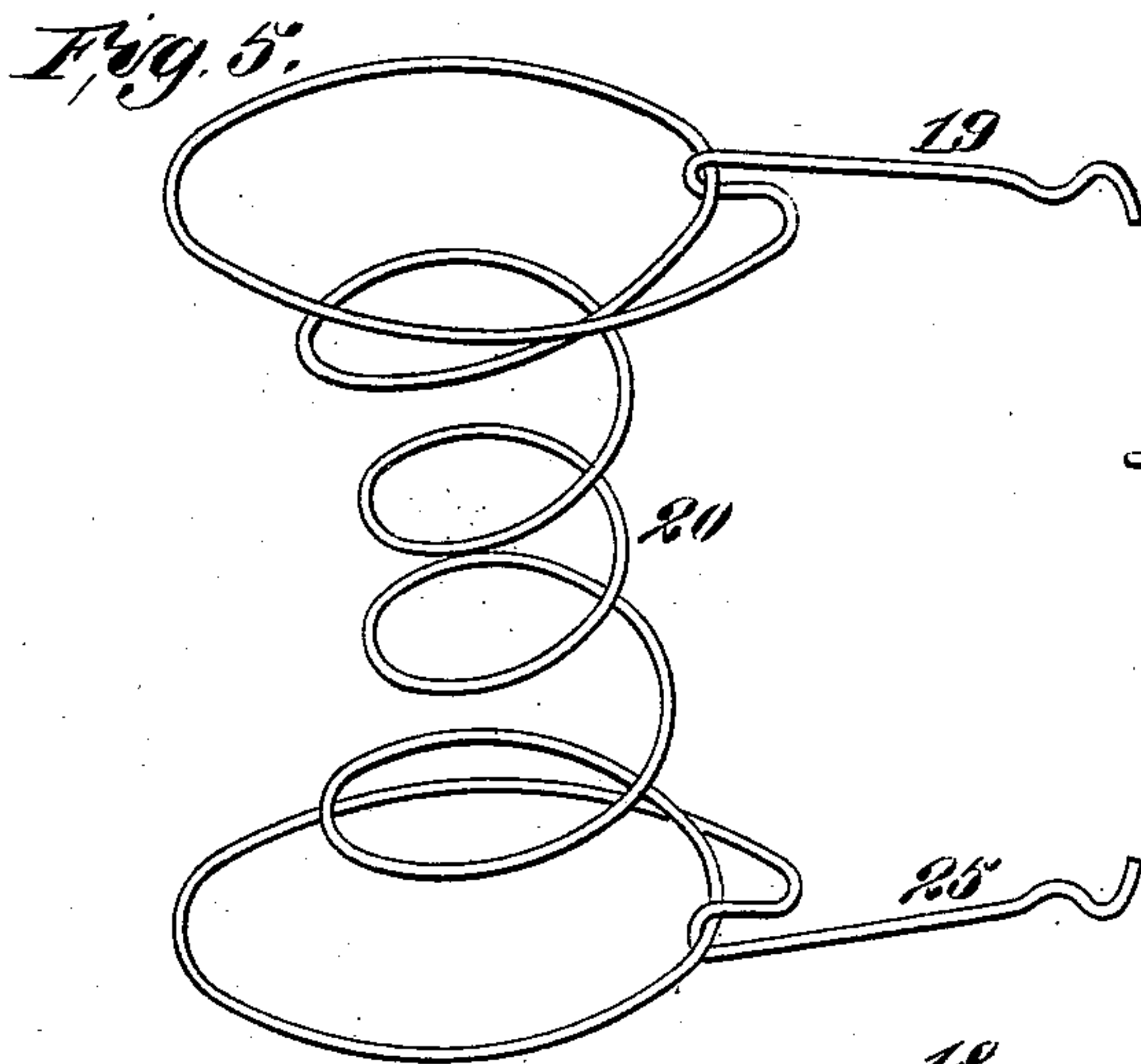
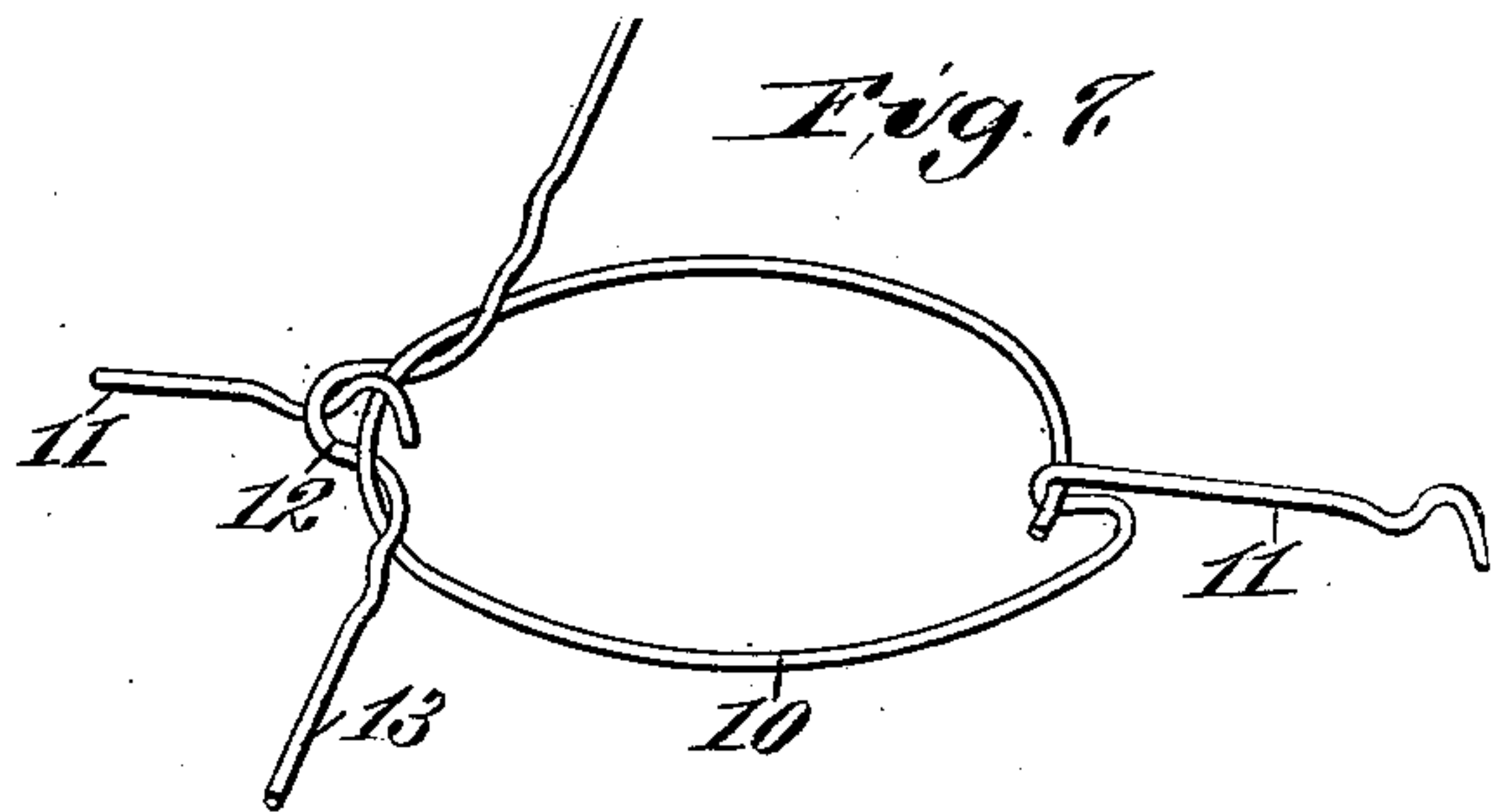
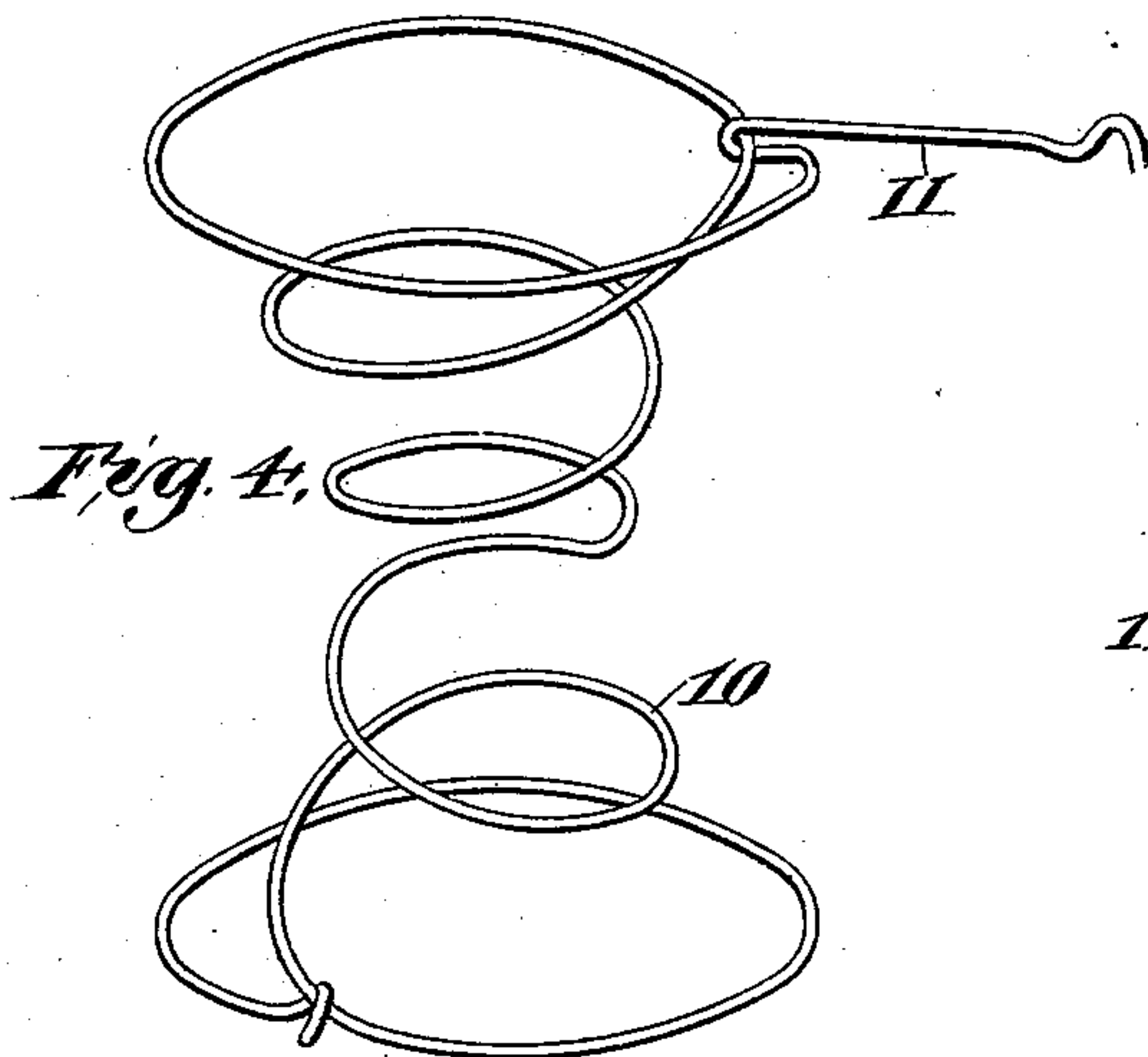
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*Attest:*  
*Charles Pickles*  
*Witness*

*Inventor:*  
*John G. Smith*

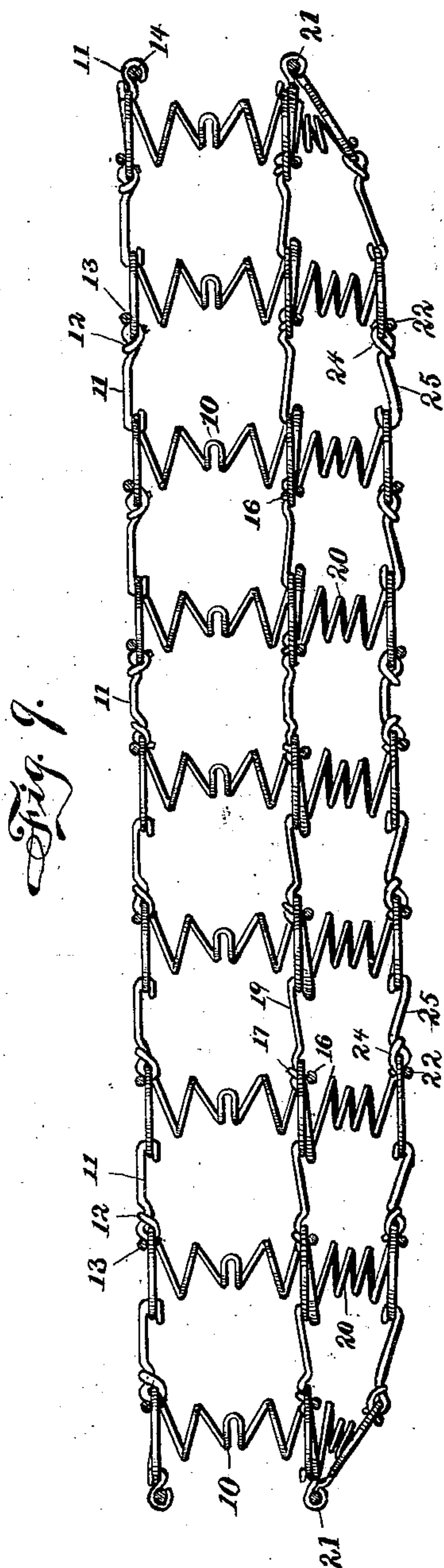
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3 Sheets—Sheet 3.

J. G. SMITH,  
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Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN G. SMITH, OF CHICAGO, ILLINOIS.

## DOUBLE-DECKER SPRING BED-BOTTOM.

SPECIFICATION forming part of Letters Patent No. 561,139, dated June 2, 1896.

Application filed October 23, 1894. Serial No. 526,730. (No model.)

*To all whom it may concern.*

Be it known that I, JOHN G. SMITH, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Double-Decker Spring Bed-Bottom, of which the following is a specification.

The object of this invention is to form a spring bed-bottom in which maximum depth of spring is retained without side motion or lateral oscillation, and at the same time attain the highest degree of elasticity, resiliency, and compressibility compatible with economy of material and labor.

My invention consists in the construction of a double-decker spring bed-bottom having novel characteristics, as will be described.

My invention consists, further, in the construction of a spring bed-bottom with interlocked or connected parallel banks of spiral or analogous springs, one above the other, the individual members of one bank of springs differing in compressibility and resilience from the members of the remaining bank of springs.

My invention consists, further, in the spring bed-bottom comprising a bank of spiral or analogous springs, tie-frames located at the upper and lower margins of said bank of springs and connected thereto, stringers connected to and connecting said springs and tie-frames, a supplemental bank of springs interlocked with the main bank of springs, and stringers connected to and connecting the supplemental springs and the adjacent tie-frame.

My invention consists, further, in the combination of a main bank of hour-glass springs and a supplemental bank of spiral springs, approximated face to face and connected or interlocked.

My invention consists, further, in the construction, arrangement, and combination of parts hereinafter set forth, pointed out in my claims, and illustrated by the accompanying drawings, in which—

Figure 1 is a side elevation of the completed bed-bottom. Fig. 2 is a bottom view of a portion of the bed-bottom. Fig. 3 is a diagrammatic view showing the relative positioning of individual springs of opposite banks. Fig. 4 is a perspective of one of the

springs 10. Fig. 5 is a perspective of one of the springs 20. Fig. 6 is a perspective showing the manner of interlocking the springs shown in Figs. 4 and 5. Fig. 7 is a perspective of the upper convolution of the spring 10 and a portion of the stringer. Fig. 8 is a perspective of the lower convolution of the spring 20 and a portion of a stringer. Fig. 9 is a transverse section of the complete bed-bottom.

A bed-bottom made according to this present invention comprises two sets or banks of spiral, coiled, or analogous springs, the springs of each of the two sets being arranged in rows and each spring being axially in line with a spring of the other bank, the springs of the main set or bank being designated by 10 and those of the supplemental set or bank by 20. The individual springs of these two sets or banks, as concerns some of the features of the invention, may be of any usual or approved construction, but I prefer that they should be of the "hour-glass" form and that the springs 10 in the main bank should have less compressibility and a greater degree of resiliency than the corresponding opposed springs of the supplemental bank or set.

Each of the springs 10 is provided with an integral hooked arm 11, interlocked with the upper convolution of the spring of which it is integral and adapted for engagement with an adjacent lateral bend 12 of a stringer 13, the springs 10 being arranged in parallel rows and having one of the stringers 13 extended along each row at the top thereof. A tie-frame 14, preferably made of an endless wire, is located about and incloses the upper margin of the bank of springs 10 and is secured to and connected with the rows of springs at the long sides of the bed-bottom by the engagement of the hooked arms 11 and the interior springs 10 by the engagement of hooks 15 at the opposite ends of the stringers 13. A series of stringers 16, having lateral bends 17 and hooked ends 18, are extended along the bottoms of the rows of springs 10 and connected to said springs by the engagement of hooked arms 19, formed integral with the upper convolutions of springs 20.

A tie-frame 21, preferably made of an endless wire, is located about and incloses the lower margin of the bank of springs 10 and



is secured to and connected with the rows of springs at the long sides of the bed-bottom by the engagement of the hooked arms 19 and the interior springs by the engagement of the hooked ends 18 of the stringers 16. The lower convolution of each of the springs 10 is located in vertical alinement with the upper convolution of one or another of the springs 20 and is interlocked with the same by the engagement of one or another of the hooked arms 19 above the convolution of the spring 10 below a bend 17 of a stringer 16 and above the convolution of the spring 20, the bend 17 being first passed from the interior to the exterior beneath the latter said convolution. A series of stringers 22, having hooked ends 23 and lateral bends 24, extend along the bottoms of the lower springs 20 and are connected parallel to each other to the end bars of the tie-frame 21 by the hooks 23 and extended longitudinally of said frame. The stringers 16 are arranged in substantially the same plane as is the tie-frame 21, to which they are connected, and hence the ends of the springs 20, which are connected together by these stringers and are by them connected with the tie-frame, lie also substantially in that plane. The stringers 22 are connected with the same tie-frame as are the stringers 16; but as they are connected to the outer ends of the springs 20 and are of greater length than the stringers 16 (see Fig. 1) they are flexed out of the plane of the tie-frame and of the ends of the springs to which the stringers 16 are connected, the result being that the outer face of the bank of springs 20 is at its ends drawn in toward the tie-frame. The opposite sides of the bed-bottom are likewise drawn in by reason of the hooked arms 25 of the springs 20 at the edge of the bed-bottom being made to engage with the tie-frame 21.

Each of the lower convolutions of the springs 20 is provided with an integral hooked arm 25, adapted for engagement above a bend 24 in a stringer 22 and beneath the lower convolution of the adjacent spring 20, the bend 24 being first passed from the interior to the exterior beneath said latter convolution, Fig. 8, the springs 20 along the long sides of the bed-bottom having arms 25 in engagement with the side bars of the frame 21.

The complete double-decked bed-bottom, as described, may be employed as shown in Fig. 1 or inverted, as desired, the idea being to so construct said bed-bottom as to provide a compressible portion in engagement with and acting upon a portion of greater resiliency and less compressibility, which latter said portion serves to automatically readjust the lighter springs after the same have been depressed by use and prevent "set" sagging of the bed-bottom.

I am aware that double-deck bed-bottoms are not new, broadly considered—that is, bed-bottoms each having an upper and a lower bank of separately-formed coiled or spirally-convoluted springs. There have

been, so far as I know, two sorts of such bed-bottoms. In one case use is made of an upper or main bank having several rows of springs arranged in a rigid frame, below which are placed a few springs in two or three rows, with the intention of having them affect the entire upper frame, but not so arranged that each lower spring shall have an intimate individual connection with and relation to a corresponding upper spring. In the other case known to me use is made of two merely conical springs, one above and one below, the apices of the two cones being brought together and joined directly at the longitudinal axis of the springs; but my construction and arrangement is materially different from either of these. In my case the upper and lower springs have a wide base or bearing over each other, as they are not connected together at the axis, but at points remote therefrom, the adjacent convolutions having a long radius, and the attachment being at the circumference or periphery described by such a radius. Consequently the two springs intimately support and brace each other and entirely prevent the swinging or oscillating of the upper part of the bed-bottom in relation to the lower.

What I claim is—

1. A bed-bottom comprising two banks of separately-formed coiled springs, the springs of one bank being respectively arranged axially in line with the corresponding springs of the other bank, the adjacent convolutions of the springs of each opposing pair being of relatively large size and connected directly together, at points remote from the axis, substantially as set forth.

2. A bed-bottom comprising coiled springs arranged in two banks, the springs of one bank being respectively in line, axially, with the corresponding springs of the other bank, and the adjacent ends of opposing springs directly and detachably interlocking with each other at points remote from the axis, substantially as set forth.

3. A bed-bottom comprising two banks of coiled springs, the springs of one bank being respectively in line, axially, with the corresponding springs of the other bank, in combination with wire stringers arranged between the two banks of springs, and formed with bends interlocking with the adjacent ends of the springs of both banks, substantially as set forth.

4. A bed-bottom comprising two banks of coiled springs, the springs of the opposing banks being arranged in pairs those of each pair being axially in line with each other, a tie-frame surrounding the ends of the springs of one bank and connected therewith, a second tie-frame surrounding the bed-bottom in the plane in which the two banks of springs meet, and stringers extending across the last said tie-frame and interlocking at points remote from the axis with the adjacent end convolutions of the springs of both banks



near their edges or peripheries, whereby these springs are connected together and to the last said tie-frame, substantially as set forth.

5 5. A bed-bottom comprising two banks of coiled springs, the springs of the opposite banks being arranged in pairs, those of each pair being end to end, and the springs of one bank being provided at the inner ends with arms, 19, the stringers arranged between and engaging with the springs of the two banks and connecting the banks together in one direction, and the aforesaid arms, 19, each engaging with the inner end of a spring of each bank and connecting two pairs of springs together in a direction transverse to the stringers, substantially as set forth.

6. In a bed-bottom, the combination of a bank of coiled springs, a tie-frame, 21, surrounding the said springs, a series of stringers, 16, extending from side to side of the said frame, and arranged in substantially the same plane as the frame, and connecting the ends of the springs with the frame, and another set of stringers, 22, longer than the stringers, 16, and connected at their ends with the said tie-frame, and between their ends with the ends of the springs opposite to the ends connected with the stringers, 16, whereby that face of the bed-bottom to which the stringers, 22, are connected is curved, substantially as set forth.

7. A bed-bottom comprising two sets or banks of coiled springs the springs of the said sets being arranged end to end, a tie-frame surrounding the ends of one set of said springs, 10, and connected therewith, another tie-frame arranged in the plane of the engaging ends of the opposite sets of springs, connections between this last said tie-frame and the inner or adjacent ends of both of said sets of springs, and means for connecting the outer ends of all the springs, 20, directly with the last said tie-frame, substantially as set forth.

8. A bed-bottom comprising two sets or banks of coiled springs, 10 and 20, the springs of one set being respectively arranged end to end with the springs of the other set, a tie-frame, 14, surrounding the outer end of the springs, 10, and connected therewith, a second tie-frame, 21, arranged in the plane of the inner ends of the two sets of springs,

stringers, 16, connecting the last said tie-frame with the inner ends of both sets of springs, and supplemental stringers, 22, connecting the outer ends of the springs, 20, with the tie-frame, 21, the stringers, 22, being longer than the stringers, 16, substantially as set forth.

9. In a bed-bottom, two separately-formed springs arranged end to end in a common axial line, and the adjacent convolutions of the springs being of relatively long radius and connected with each other at the outer peripheries of the springs at points remote from the axis, substantially as set forth.

10. A bed-bottom comprising two banks or sets of coiled springs, each spring of one bank being in line, axially, with a spring of the other bank, and the springs of one bank differing in compressibility and resilience from the opposing springs of the other bank, substantially as set forth.

11. In a bed-bottom, the combination of a bank of coiled springs, two tie-frames respectively located at the upper end and the lower ends of the said springs and connected thereto, stringers connecting the said springs and tie-frames, a supplemental bank of springs respectively interlocking with the springs of the main bank, the outer ends of the springs of said supplemental bank being directly connected with one of the aforesaid tie-frames, substantially as set forth.

12. The combination of the bank of hour-glass springs, 10, the tie-frame, 14, at and around their outer ends, the stringers, 13 connected to the tie-frame and to the springs, the tie-frame, 21, at the inner ends of the springs, 10, the stringers, 16, connecting said frame 21 to the springs, the hour-glass spring 20, respectively arranged end to end under the springs, 10, and connected to said tie-frame, 21, by said stringers, 16, and the supplemental stringers, 22, connecting the outer ends of the springs, 20, together and to the tie-frame 21, substantially as set forth.

Signed at St. Louis, Missouri, this 20th day of October, 1894.

JOHN G. SMITH.

In presence of—

JOHN A. GILLIAM,  
JOHN W. DRABELL.